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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/518,270	Applicant(s) ROBERTS ET AL.
	Examiner OSCAR A. LOUIE	Art Unit 2136

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 17 March 2008.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-9, 11 and 17-28 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-9, 11, 17-28 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/1648)
Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____

5) Notice of Informal Patent Application

6) Other: _____

DETAILED ACTION

This second non-final action is in response to the amendment filed 03/1. In light of the applicant's amendments, the examiner hereby withdraws his previous Claim Objections with respect to Claims 4, 6, & 22. Claims 1-9, 11, & 17-28 are pending and have been considered as follows.

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:
 - Claim 27 lines 1-2 recite "a computer readable media having thereon the following computer-executable instructions" however, the applicant's Specification does not appear to provide support for having instructions stored on a "computer readable media";

Claim Objections

2. Claim 27 is objected to because of the following informalities:
 - Claim 27 line 1 recites the term "media" which should be "...medium..." thereby staying within the same language as supported by the applicant's Specification on the bottom of page 2.

- Claim 27 line 3 recites the term "for" which should be "...to...";

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 22, 27, & 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- The phrase "substantially equal" in claim 1 line 14 is a relative phrase which renders the claim indefinite. The phrase "substantially equal" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.
- The phrase "a capacity associated with a size" in claim 22 line 23 is a relative phrase which renders the claim indefinite. The phrase "a capacity associated with a size" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.
- The phrase "substantially a size" in claim 27 line 15 is a relative phrase which renders the claim indefinite. The phrase "substantially a size" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

- The phrase "substantially equal" in claim 28 lines 3-4 & 6 is a relative phrase which renders the claim indefinite. The phrase "substantially equal" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.
- The phrase "substantially a size" in claim 28 line 15 is a relative phrase which renders the claim indefinite. The phrase "substantially a size" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 22 & 27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

- Claim 22 recites "an apparatus configured to embed a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions" comprising "means for" which appear to be nothing more than computer program modules which is non-statutory subject matter, thereby invoking 35 U.S.C. 101;

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works, and a compilation or mere arrangement of data.

*Both types of "descriptive material" are nonstatutory when claimed as descriptive material per se, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (discussing patentable weight of data structure limitations in the context of a statutory claim to a data structure stored on a computer readable medium that increases computer efficiency) and >*In re Warmerdam*, 33 F.3d *>1354, < 1360-61, 31 USPQ2d *>1754, < 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory)*

- Claim 27 recites "a computer readable media having thereon the following computer executable instructions" which appears to include carrier waves and transmission media which is non-statutory subject matter, thereby invoking 35 U.S.C. 101;

*When nonfunctional descriptive material is recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal, it is not statutory since no requisite functionality is present to satisfy the practical application requirement. Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See >*Diamond v. Diehr*, 450 U.S. *>175, < 185-86, 209 USPQ *>1, < 8 (noting that the claims for an algorithm in Benson were unpatentable as abstract ideas because "[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer."). Such a result would exalt form over substance. *In re Sarkar*, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978) ("[E]ach invention must be evaluated as claimed; yet semantogenic considerations preclude a determination based solely on words appearing in the claims. In the final analysis under § 101, the claimed invention, as a whole, must be evaluated for what it is.") (quoted with approval in *Abele*, 684 F.2d at 907, 214 USPQ at 687). See also *In re Johnson*, 589 F.2d 1070, 1077, 200 USPQ 199, 206 (CCPA 1978) ("form of*

the claim is often an exercise in drafting"). Thus, nonstatutory music is not a computer component, and it does not become statutory by merely recording it on a compact disk. Protection for this type of work is provided under the copyright law

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 11, 22, 23, 27, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis (US-5907619-A) in view of Gennaro et al. (US-6009176-A).

Claims 1 & 22:

Davis discloses a method of, an apparatus configured to embed/embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions comprising,

- “calculating a signature based on the stored first frame portion of said frame of said audio-visual signal” (i.e. “FIG. 3 is an illustrative block diagram showing another embodiment of the SCSD 100 that allows authentication of individual sections of an image frame, using only one signature”) [column 5 lines 10-13];

- “storing a second frame portion of the frame to replace the first frame portion, the reduced memory requirement being substantially equal to a size of the first frame portion or the second frame portion/wherein the means for storing has a capacity associated with a size of the first portion or the second portion” (i.e. “authentication of individual sections of an image frame, using only one signature”) [column 5 lines 12-13];
- “embedding the signature in the second frame portion of the frame so that the signature is embedded in a different portion of the frame than a portion of the frame for which the signature is generated” (i.e. “authentication of individual sections of an image frame, using only one signature”) [column 5 lines 12-13];

but, does not disclose,

- “storing a first frame portion of said audio-visual signal, thereby allowing for a reduced memory requirement relative to storing an entire frame of said audio-visual signal,” although Gennaro et al. do suggest reducing computation time by reducing the number of digital signatures and only storing a small amount of information from the data stream for processing at a time (i.e. storing a portion), as recited below;
- “embedding the signature in one of said at least two frame portions of said frame of said audio-visual signal,” although Gennaro et al. do suggest the embedding of authentication information inside a frame/field, as recited below;

however, Gennaro et al. do disclose,

- “It is therefore an object of this invention to reduce computation time necessary to sign and authenticate a stream of data by reducing the number of digital signatures required for one to authenticate the data stream. The foregoing is accomplished without having to

resort to storing large portions of the data stream and without maintaining excessively large authentication tables... the receiver has a "small" buffer..." [column 2 lines 30-36, 49];

- "In the case of MPEG video and audio, there are several methods for embedding authentication data. Firstly the Video Elementary stream has a USER-DATA section for putting arbitrary user defined information and this section could be embedded in each frame (or field)" [column 12 lines 54-57];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant's invention to include, "storing a first frame portion of said audio-visual signal, thereby allowing for a reduced memory requirement relative to storing an entire frame of said audio-visual signal" and "embedding the signature in one of said at least two frame portions of said frame of said audio-visual signal," in the invention as disclosed by Davis for the purposes of embedded authentication with reduced computation time and storage capacity.

Claim 11:

Davis and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 1 above, but Davis does not disclose,

- "the steps of calculating and embedding said signature are performed in real-time," although Gennaro et al. do suggest fast computations resulting in real-time playback, as recited below;

however, Gennaro et al. do disclose,

- “the receiver has processing power or hardware that can compute a small number of fast cryptographic checksums faster than the incoming stream rate while still being able to play the stream in real-time” [column 2 lines 51-54];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant’s invention to include, “the steps of calculating and embedding said signature are performed in real-time,” in the invention as disclosed by Davis for the purposes of playing the stream in real-time.

Claim 23:

Davis and Gennaro et al. disclose an apparatus configured to embed a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 22 above, but Davis does not disclose,

- “said means for calculating and means for embedding are performed while said first portion is stored in said memory storage device,” although Gennaro et al. do suggest the usage of a smaller buffer, as recited below;

however, Gennaro et al. do disclose,

- “the receiver has a “small” buffer” [column 2 line 49];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant's invention to include, "storing a first frame portion of said audio-visual signal, thereby allowing for a reduced memory requirement relative to storing an entire frame of said audio-visual signal," in the invention as disclosed by Davis for the purposes of reduced computation time and storage capacity.

Claim 27:

Davis discloses a computer readable media having thereon the following computer executable instructions comprising,

- "calculating a signature based on the stored first frame portion" (i.e. "FIG. 3 is an illustrative block diagram showing another embodiment of the SCSD 100 that allows authentication of individual sections of an image frame, using only one signature")
[column 5 lines 10-13];
- "embedding the signature in a second frame portion of the frame so that the signature is embedded in a different portion of the frame than a portion of the frame for which the signature is generated" (i.e. "authentication of individual sections of an image frame, using only one signature") [column 5 lines 12-13];
- "thereby reducing a memory size for authenticating the frame from a size of the frame to substantially a size of the first frame portion or the second frame portion" (i.e. "authentication of individual sections of an image frame, using only one signature")
[column 5 lines 12-13];

but, does not disclose,

- “storing a first portion of a frame of an audio-visual signal wherein said frame is comprised of at least two frame portions, thereby allowing for a reduced memory requirement,” although Gennaro et al. do suggest reducing computation time by reducing the number of digital signatures and only storing a small amount of information from the data stream for processing at a time (i.e. storing a portion), as recited below;

however, Gennaro et al. do disclose,

- “It is therefore an object of this invention to reduce computation time necessary to sign and authenticate a stream of data by reducing the number of digital signatures required for one to authenticate the data stream. The foregoing is accomplished without having to resort to storing large portions of the data stream and without maintaining excessively large authentication tables... the receiver has a "small" buffer...” [column 2 lines 30-36, 49];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant’s invention to include, “storing a first portion of a frame of an audio-visual signal wherein said frame is comprised of at least two frame portions, thereby allowing for a reduced memory requirement,” in the invention as disclosed by Davis for the purposes of embedded authentication with reduced computation time and storage capacity.

Claim 28:

Davis discloses a method of embedding a signature in an audio-visual signal comprising,

- “calculating a first signature based on the first slice stored in the memory” (i.e. “FIG. 3 is an illustrative block diagram showing another embodiment of the SCSD 100 that allows authentication of individual sections of an image frame, using only one signature”) [column 5 lines 10-13];
- “replacing the first slice in the memory with a second slice for calculating a second signature of the second slice” (i.e. “authentication of individual sections of an image frame, using only one signature”) [column 5 lines 12-13];
- “embedding the first signature in the second slice so that a signature is embedded in a different slice than a slice of the frame for which the signature is generated and a memory size for authenticating the frame is reduced from a size of the frame to substantially a size of the first slice” (i.e. “authentication of individual sections of an image frame, using only one signature”) [column 5 lines 12-13];

but, does not disclose,

- “dividing a frame of the audio-visual signal into substantially equal sized slices,” although Gennaro et al. do suggest frames each with user data subsections, as recited below;

- “storing a first slice of the slices in a memory having a capacity which is substantially equal to a size of the slice,” although Gennaro et al. do suggest reducing computation time by reducing the number of digital signatures and only storing a small amount of information from the data stream for processing at a time (i.e. storing a portion), as recited below;

however, Gennaro et al. do disclose,

- [FIG 1A illustrates frames each with user data subsections];
- “It is therefore an object of this invention to reduce computation time necessary to sign and authenticate a stream of data by reducing the number of digital signatures required for one to authenticate the data stream. The foregoing is accomplished without having to resort to storing large portions of the data stream and without maintaining excessively large authentication tables... the receiver has a "small" buffer...” [column 2 lines 30-36, 49];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant’s invention to include, “dividing a frame of the audio-visual signal into substantially equal sized slices” and “storing a first slice of the slices in a memory having a capacity which is substantially equal to a size of the slice,” in the invention as disclosed by Davis for the purposes of embedded authentication with reduced computation time and storage capacity.

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8. Claims 2, 4, 5, 17-21, & 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis (US-5907619-A) in view of Gennaro et al. (US-6009176-A) and in further view of Baker et al. (US-5790110-A).

Claims 2 & 4:

Davis and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 1 above, but their combination do not disclose,

- “said at least two frame portions of said frame of said audio-visual signal respectively comprise patterns of horizontal lines of said frame of said audio-visual signal,” although Baker et al. do suggest that in interlaced video, fields or portions of fields are comprised of even and odd horizontal lines, as recited below;
- “said at least two frame portions of said audio-visual signal comprise a slice of at least one consecutive line of a plurality of horizontal lines comprising said frame of said audio-visual signal,” although Baker et al. do suggest that in interlaced video, fields or portions of fields are comprised of even and odd horizontal lines, as recited below;
- “said second field is a field comprising a slice of at least one consecutive horizontal line of a plurality of said horizontal lines comprising said frame of said audio-visual signal,” although Baker et al. do suggest that in interlaced video, fields or portions of fields are comprised of even and odd horizontal lines, as recited below;

however, Baker et al. do disclose,

- “After writing composite pixel data for sixteen (16) video pixels on four adjacent lines, the software according to the first embodiment checks to see if a horizontal line of composite pixel data has been completed... This process continues until a complete screen of composite pixel data has been written into the display memory (which with interlacing includes both an even and odd field)” [column 18 lines 59-60 & column 19 line 10];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant's invention to include, “said at least two frame portions of said frame of said audio-visual signal respectively comprise patterns of horizontal lines of said frame of said audio-visual signal” and “said at least two frame portions of said audio-visual signal comprise a slice of at least one consecutive line of a plurality of horizontal lines comprising said frame of said audio-visual signal” and “said second field is a field comprising a slice of at least one consecutive horizontal line of a plurality of said horizontal lines comprising said frame of said audio-visual signal,” in the invention as disclosed by Davis and Gennaro et al. since the make up of fields/portions of fields comprise even and odd horizontal lines, it is reasonable to expect one of ordinary skill in the art to follow similar interlaced video standards.

Claim 5:

Davis, Gennaro et al., and Baker et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 4 above, but the combination of Davis and Gennaro et al. do not disclose,

- “said audio-visual signal is an interlaced signal,” although Baker et al. do suggest that a video signal may be interlaced, as recited below;
- “said first portion comprises one of all even or all odd lines,” although Baker et al. do suggest fields or portions of a field comprising even and odd lines, as recited below;
- “said second portion comprises all remaining odd or even lines not included in said first portion,” although Baker et al. do suggest fields or portions of a field comprising even and odd lines, as recited below;

however, Baker et al. do disclose,

- “A “Field” is video data for a set of lines that make up part of one screen or picture out of a video stream. For interlaced systems, a frame usually has two fields” [column 5 lines 15-16];
- “For interlaced systems, a frame usually has two fields. One field contains the even-numbered lines of video data while the other field is made up of the odd-numbered lines of video data” [column 5 lines 17-19];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant's invention to include, "said audio-visual signal is an interlaced signal" and "said first portion comprises one of all even or all odd lines" and "said second portion comprises all remaining odd or even lines not included in said first portion," in the invention as disclosed by Davis and Gennaro et al. since a video signal may be interlaced where fields or portions of a field comprise even and odd lines, it is reasonable to expect one of ordinary skill in the art to have one portion made up of even lines and another portion made up of odd lines.

Claim 17:

Davis and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 1 above, but the combination of Davis and Gennaro et al. do not disclose,

- "the first and second portions are selected based on said audio-visual signal being one of an interlaced or a noninterlaced signal," although Baker et al. do suggest interlaced and noninterlaced video, as recited below;

however, Baker et al. do disclose,

- "In NTSC, PAL and SECAM, every other scan line belongs to the same field. Each field is drawn on the screen consecutively--first one field, then the other. Many computer monitors, on the other hand, are non-interlaced and the graphics data is not provided in separate fields" [column 2 lines 17-22];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant's invention to include, "the first and second portions are selected based on said audio-visual signal being one of an interlaced or a noninterlaced signal," in the invention as disclosed by Davis and Gennaro et al. since a video signal may be interlaced with data in separate fields or noninterlaced data not in separate fields as in accordance with a standard, it is reasonable to expect one of ordinary skill in the art to have either standardize video type.

Claim 18:

Davis and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 17 above, but the combination of Davis and Gennaro et al. do not disclose,

- "said audio-visual signal is said interlaced signal," although Baker et al. do suggest that a video signal may be interlaced, as recited below;
- "said first portion comprising an upper field of said frame of said audio-visual signal," although Baker et al. do suggest fields or portions of a field comprising even and odd lines, as recited below;
- "said second portion comprising a lower field of said frame of said audio-visual signal," although Baker et al. do suggest fields or portions of a field comprising even and odd lines, as recited below;

however, Baker et al. do disclose,

- “A “Field” is video data for a set of lines that make up part of one screen or picture out of a video stream. For interlaced systems, a frame usually has two fields” [column 5 lines 15-16];
- “In an interlaced system, each field is displayed in its entirety--therefore, all of the odd-numbered lines are displayed, then the even, then the odd, and so on” [column 5 lines 19-22];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant’s invention to include, “said audio-visual signal is said interlaced signal” and “said first portion comprising an upper field of said frame of said audio-visual signal” and “said second portion comprising a lower field of said frame of said audio-visual signal,” in the invention as disclosed by Davis and Gennaro et al. since a video signal may be interlaced where fields or portions of a field comprise even and odd lines, it is reasonable to expect one of ordinary skill in the art to have one upper portion made up of even lines and another lower portion made up of odd lines or any combination thereof.

Claim 19:

Davis and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 18 above, but the combination of Davis and Gennaro et al. do not disclose,

- “said upper and lower portions comprise patterns of horizontal lines of said audio-visual signal,” although Baker et al. do suggest that in interlaced video, fields or portions of fields are comprised of even and odd horizontal lines, as recited below;
- “each of said patterns of horizontal lines having fewer lines than the entire audiovisual signal,” although Baker et al. do suggest that in interlaced video, fields or portions of fields are comprised of even and odd horizontal lines, as recited below;

however, Baker et al. do disclose,

- “After writing composite pixel data for sixteen (16) video pixels on four adjacent lines, the software according to the first embodiment checks to see if a horizontal line of composite pixel data has been completed...This process continues until a complete screen of composite pixel data has been written into the display memory (which with interlacing includes both an even and odd field)” [column 18 lines 59-60 & column 19 line 10];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant's invention to include, “said upper and lower portions comprise patterns of horizontal lines of said audio-visual signal” and “each of said patterns of horizontal lines having fewer lines than the entire audiovisual signal,” in the invention as disclosed by Davis and Gennaro et al. since the make up of fields/portions of fields comprise even and odd horizontal lines, it is reasonable to expect one of ordinary skill in the art to follow similar interlaced video standards.

Claim 20:

Davis and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 17 above, but the combination of Davis and Gennaro et al. do not disclose,

- “said audio-visual signal is said non-interlaced signal” although Baker et al. do suggest noninterlaced video, as recited below;
- “said first portion comprising an upper half of said frame of said audio-visual signal,” although Baker et al. do suggest field portions (i.e. upper/lower), as recited below;
- “said second portion comprises a lower half of said single frame,” although Baker et al. do suggest field portions (i.e. upper/lower), as recited below;

however, Baker et al. do disclose,

- “It will also be readily apparent that for a non-interlaced video format, even and odd fields and even and odd video control information are not required and may be replaced with single vertical control information and field portions of the memory” [column 20 lines 32-36];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant’s invention to include, “said audio-visual signal is said non-interlaced signal” and “said first portion comprising an upper half of said frame of said audio-visual signal” and “said second portion comprises a lower half of said single frame,” in the invention as disclosed by Davis and Gennaro et al. since a video signal may be noninterlaced where fields or portions of a field may

comprise even and odd lines, it is reasonable to expect one of ordinary skill in the art to have one upper portion made up of even lines and another lower portion made up of odd lines or any combination there of.

Claim 21:

Davis, and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 20 above, but the combination of Davis and Gennaro et al. do not disclose,

- “each of said upper and lower halves of said frame comprise patterns of horizontal lines of said audio-visual signal,” although Baker et al. do suggest that in interlaced video, fields or portions of fields are comprised of even and odd horizontal lines, as recited below;
- “said respective patterns having fewer lines than the entire audio-visual signal,” although Baker et al. do suggest that in interlaced video, fields or portions of fields are comprised of even and odd horizontal lines, as recited below;

however, Baker et al. do disclose,

- “After writing composite pixel data for sixteen (16) video pixels on four adjacent lines, the software according to the first embodiment checks to see if a horizontal line of composite pixel data has been completed... This process continues until a complete

screen of composite pixel data has been written into the display memory (which with interlacing includes both an even and odd field)" [column 18 lines 59-60 & column 19 line 10];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant's invention to include, "each of said upper and lower halves of said frame comprise patterns of horizontal lines of said audio-visual signal" and "said respective patterns having fewer lines than the entire audio-visual signal," in the invention as disclosed by Davis and Gennaro et al. since the make up of fields/portions of fields comprise even and odd horizontal lines, it is reasonable to expect one of ordinary skill in the art to follow similar interlaced video standards.

Claim 24:

Davis and Gennaro et al. disclose an apparatus configured to embed a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 23 above, but the combination of Davis and Gennaro et al. do not disclose,

- "said first and second portions comprise patterns of horizontal lines of said audio-visual signal," although Baker et al. do suggest that in interlaced video, fields or portions of fields are comprised of even and odd horizontal lines, as recited below;
- "said patterns having fewer lines than the entire audio-visual signal," although Baker et al. do suggest that in interlaced video, fields or portions of fields are comprised of even and odd horizontal lines, as recited below;

however, Baker et al. do disclose,

- “After writing composite pixel data for sixteen (16) video pixels on four adjacent lines, the software according to the first embodiment checks to see if a horizontal line of composite pixel data has been completed... This process continues until a complete screen of composite pixel data has been written into the display memory (which with interlacing includes both an even and odd field)” [column 18 lines 59-60 & column 19 line 10];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant's invention to include, “said first and second portions comprise patterns of horizontal lines of said audio-visual signal” and “said patterns having fewer lines than the entire audio-visual signal,” in the invention as disclosed by Davis and Gennaro et al. since the make up of fields/portions of fields comprise even and odd horizontal lines, it is reasonable to expect one of ordinary skill in the art to follow similar interlaced video standards.

9. Claims 6, 25, & 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis (US-5907619-A) in view of Gennaro et al. (US-6009176-A) and in further view of Kwon (US-5373323-A).

Claim 6:

Davis, and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 1 above, but their combination do not disclose,

- “said audio-visual signal is a non-interlaced signal,” although Kwon does suggest non-interlaced or progressive scan video, as recited below;
- “said first and second frame portions comprise consecutive slices of said audio-visual signal,” although Kwon does suggest consecutive horizontal lines within each frame, as recited below;
- “wherein each of said consecutive slices are further comprised of at least one consecutive line of said frame,” although Kwon does suggest consecutive horizontal lines within each frame, as recited below;

however, Kwon does disclose,

- “On the other hand, in the non-interlaced or “progressive” scan method, each frame of image data is scanned once from the top horizontal line to the bottom horizontal line without any jumping” [column 1 lines 25-28];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant’s invention to include, “said audio-visual signal is a non-interlaced signal” and “said first and second frame portions comprise consecutive slices of said audio-visual signal” and “wherein each of said consecutive slices are further comprised of at least one consecutive line of said frame,” in the invention as disclosed by Davis, and Gennaro et al. since a video signal may be noninterlaced where portions of a frame may comprise consecutive horizontal lines, it is reasonable to expect one of ordinary skill in the art to have progressive scanning if they do not require even and odd line portions.

Claims 25 & 26:

Davis, and Gennaro et al., disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 22 above, but their combination do not disclose,

- “said apparatus is a camera,” although Kwon does suggest a television camera, as recited below;
- the camera is selected from the group consisting of: a surveillance camera, a security camera, a digital video camera and a medical imaging camera,” although Kwon does suggest a television camera, as recited below;

however, Kwon does disclose,

- “a television camera” [column 1 line 29];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant’s invention to include, “said apparatus is a camera” and “the camera is selected from the group consisting of: a surveillance camera, a security camera, a digital video camera and a medical imaging camera,” in the invention as disclosed by Davis, and Gennaro et al. since a video signal would imply the usage of some form of video content recording device (i.e. camera).

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10. Claims 3 & 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis (US-5907619-A) in view of Gennaro et al. (US-6009176-A) and in further view of Isnardi et al. (US-6037984-A).

Claim 3:

Davis, and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 1 above, but their combination do not disclose,

- “said steps of calculating and embedding are repeated until a signature is embedded for all regions of said frame,” although Isnardi et al. does suggest spreading a watermark over several portions, as recited below;

however, Isnardi et al. does disclose,

- “The image that is watermarked is generally divided into a plurality of blocks of pixels, where each block is watermarked in the above manner on a block-by-block basis”
[column 2 lines 27-30];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant’s invention to include, “said steps of calculating- and embedding are repeated until a signature is embedded for all regions of said frame,” in the invention as disclosed by Davis, and Gennaro et al. for the purposes of limiting the amount of modification to the original video signal.

Claims 7 & 8:

Davis, and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 1 above, but their combination do not disclose,

- “the embedded signature comprises a watermark,” although Isnardi et al. does suggest a spread spectrum watermark, as recited below;
- “the watermark is embedded as a spread spectrum watermark,” although Isnardi et al. does suggest a spread spectrum watermark, as recited below;

however, Isnardi et al. does disclose,

- “One technique used to identify digital image ownership is a digital “watermark” that is embedded into an image or image sequence” [column 1 lines 15-16];
- “the spread watermark” [column 1 line 44];

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the applicant’s invention to include, “said steps of calculating- and embedding are repeated until a signature is embedded for all regions of said frame,” in the invention as disclosed by Davis, and Gennaro et al. for the purposes of identifying digital image ownership.

Claim 9:

Davis, and Gennaro et al. disclose a method of embedding a signature in an audio-visual signal for authentication of said audio-visual signal, said signal being comprised of a plurality of sequential frames, each of said plurality of sequential frames being comprised of at least two frame portions, as in Claim 7 above, their combination further disclosing,

- “the watermark is embedded in a different portion of said frame than the portion of said frame for which said signature is generated” (i.e. “authentication of individual sections of an image frame, using only one signature,” which suggests that the watermark would be embedded only in one of the plurality of portions/fields) [column 5 lines 12-13].

Response to Arguments

11. Applicant’s arguments, see pages 16-17, filed 03/17/2008, with respect to the rejection(s) of claim(s) 1-9, 11, & 17-28 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a different interpretation of the previous applied prior art references.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Oscar Louie whose telephone number is 571-270-1684. The examiner can normally be reached Monday through Thursday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Nasser Moazzami, can be reached at 571-272-4195. The fax phone number for Formal or Official faxes to Technology Center 2100 is 571-273-8300.

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OAL
07/15/2008

/Nasser G Moazzami/
Supervisory Patent Examiner, Art Unit 2136